**LAKEVIEW SUSTAINMENT AREA**

# BACKGROUND

## What is PM?

Particulate matter (PM) is the general term used for a mixture of solid particles or liquid droplets found in the air. Fine particulate matter (PM2.5) in the atmosphere is composed of a complex mixture of particles: sulfate, nitrate, and ammonium; particle-bound water; elemental carbon; organic carbon representing a variety of organic compounds; and crustal material.

PM2.5 can accumulate in the respiratory system and is associated with numerous health effects. These health effects are linked to premature death, especially related to heart disease, cardiovascular effects, such as heart attacks and strokes; reduced lung development and chronic respiratory diseases, such as asthma. Sensitive groups that are at greatest risk include the elderly, individuals with cardiopulmonary disease such as asthma, and children.

## History of PM in Lakeview

Lakeview has had a long history of addressing PM issues in the community. Areas in violation of the national ambient air quality standard (NAAQS) for PM2.5 (based on the most recent three years of federal reference monitoring data) are designated as a “nonattainment area” by the EPA. In 1987, EPA established the daily PM10 standard of 150 ug/m3. Lakeview was designated nonattainment for PM10. By the mid-1990s, Lakeview put together an attainment plan that included specific strategies (voluntary and mandatory) to bring the area back into compliance, met the standard by 1997, and subsequently developed a maintenance plan showing how the area would continue to meet the standard. These plans were so successful that when EPA revised the PM standard in 1997, the community was able to meet the new PM2.5 standard due in large part to the existing strategies in the plans.

In 2006, EPA again revised the PM2.5 standard, lowering it from 65 ug/m3 to 35 ug/m3. At the time of required designations, Lakeview did not have three full years of data to make a determination. Since then, Lakeview has violated the standard but has not been formally designated as nonattainment.

This creates a potential concern for areas like Lakeview who do not have the restrictions associated with nonattainment but are limited by the permitting requirements when an area is over the standard. It prevents companies with intermediate and large amounts of PM2.5 emissions from establishing themselves in Lakeview, thus creating a need for options in Lakeview. DEQ’s classification of a sustainment area provides flexibility for areas such as Lakeview while ensuring air quality protection.

# MONITORING

The Lakeview area has one particulate (PM2.5) monitoring site with the sampler located on the corner of Center and M Street. DEQ has monitored at this site since 1991 for PM10 and since 2007 for PM2.5. Lakeview currently meets the revised annual PM2.5 standard, but has been close to violating or has violated the daily standard in recent years (Figure 1).

Figure 1: 98th percentile concentrations measured at Center and M Street monitor, Lakeview, Oregon.

The 24 hour standard for PM2.5 is met whenever the three year average of the annual 98th percentile of values at monitoring sites is less than or equal to 35 µg/m3. While Lakeview has at times violated the standard, the area was not designated nonattainment for the 24-hour PM2.5 NAAQS, because there was no monitoring information available at the time of designations.

# LAKEVIEW GEOGRAPHIC BOUNDARY

Lakeview is located in south central Oregon about 96 miles east of Klamath Falls at an elevation of about 4,800 feet. The area is typified by semi-arid climate where annual rainfall is 13 inches. The town of Lakeview serves as an important commercial center for Lake County. Lakeview has a current air quality boundary for PM10, which consists of the Lakeview urban growth boundary (Fig. 3) because most of the sources of PM10 emissions are located within the urban growth boundary.



Figure 1*: Lakeview Urban Growth Boundary*

The urban growth boundary consists of the entire town of Lakeview as well as parts of Lake County. As with PM10, most of the PM2.5 sources, including industrial sources, are also located within the urban growth boundary (UGB). Since these sources impact the PM2.5 monitor, the area within the urban growth boundary was a logical choice for a PM2.5 area designation.

# EMISSION INVENTORY

An emission inventory consists of emission estimates from all sources that emit PM2.5 in the Lakeview area. Emissions inventory data is essential for identification of the sources contributing to air quality problems, and the development of emission reduction strategies.

The analysis of PM2.5 concentrations began with an assessment of PM2.5 emissions in Lakeview. Emission sources are grouped into four major categories. These include major point sources (industrial facilities), on-road mobile sources (e.g. car and truck exhaust, road dust), non-road mobile sources (e.g., construction equipment, recreational off road vehicles, lawn and garden equipment), and area sources (e.g., fugitive dust sources, outdoor burning, woodstoves). PM2.5 emissions are estimated using many sources of information, including industrial permits, population, housing, employment information, and estimates of motor vehicle travel in the nonattainment area.

## Lakeview Emission Inventory

An emissions inventory (EI) was created to estimate actual PM2.5 emissions occurring in the air shed. For the Lakeview area, the PM2.5 EI is 2011. This year was selected because it is a year for which DEQ completed the National Emission Inventory (NEI) for Lake County. In some cases where current data wasn’t available, DEQ extrapolated? 2008 data. The Lake County inventory was scaled down/back/ to obtain an estimate of Lakeview’s UGB emissions.

### Source Category Distribution of Emission Inventory

Sources of PM2.5 in Lakeview include area sources (e.g., woodstoves), major industry, on-road mobile sources (e.g., car and truck exhaust, road dust), non-road mobile sources (e.g., construction equipment). The following sources represent the main emission sources in Lakeview.

#### Residential Wood Combustion

Residential wood combustion is a common way to heat homes in Oregon. To estimate emissions from wood burning, DEQ used the estimated Lake County and SE Oregon residential wood heating surveys conducted by ? and scaled it to the Lakeview area based on 2010 census population and households.

#### Mobile and Nonroad Sources

Road dust and tailpipe emissions of PM2.5 from motor vehicles were calculated by applying emission factors from the Lake County 2011 NEI for EPA and scaled to Lakeview’s UGB and the Goose Lake Basin based on 2010 census population and households and for non-road vehicles by area served. Emissions from rail, aircraft, construction and other non-road sources were estimated using EPA’s NEI for Lake County and scaled based on area served.

#### Industrial Point Sources

DEQ maintains data on industrial point source emissions for all sources emitting 10 or

 more tons of criteria pollutants per year. Emissions information is compiled from each source’s air permit issued by DEQ. All permitted point sources within the Goose Lake Basin are included in the emissions inventory.

Emission estimates are developed for both annual and daily PM2.5 emissions. Annual emissions are reported as tons per year (tpy), whereas typical season and design day emissions are reported as pounds per day (lbs/day). For 2011, the design day emissions are the worst case emissions and were estimated/calculated? for days when the highest monitored concentrations or design value (DV) concentrations were measured. For Lakeview, the typical season and design days occur during the wood heating season in winter (November through February) when the daily PM2.5 standard is most frequently exceeded.

The design day emissions for area, on-road, non-road and industrial sources are shown in Table 1 and Figure 2 for the total UGB.

Table 1: 2011 Design Day PM2.5 Emissions for the Lakeview Analysis Area.

|  |  |
| --- | --- |
|  | UGB Design Day (lbs/day) |
| Stationary Area Sources |   |
| All Residential Wood Combustion(1) | 704 |
| Wildfire/Prescribed Burning | 0 |
| All Other Stationary Area Sources | 39 |
| On-Road | 2 |
| Non-road Vehicles & Equipment | 3 |
| Industrial Sources | 118 |
|  |   |
| ***Total, All Sources, lbs/day*** | **866** |

Figure 2: PM2.5 Emissions by Source Category as a Percentage (Design Day)

Most of the PM2.5 emissions are from residential wood combustion. However, to get an estimate of which sources are directly influencing the monitor, DEQ looked into effective emissions. Effective emissions are defined as those emission rates that correlate with measured concentrations at the monitor.  In considering the effective emissions, the residential wood combustion concentrations are roughly 90% of the PM2.5 concentration at the filter sample and industrial emissions are roughly 1% of the PM2.5 concentration at the filter. Residential wood heating is the primary source of air pollution in the Lakeview area, and efforts to reduce PM2.5 pollution should focus on this source category.

# LAKEVIEW AS A SUSTAINMENT AREA

## What is a sustainment area?

DEQ is proposing rules that will help prevent an area from becoming formally designated as a nonattainment area, identifying this type of area as a sustainment area. Sustainment areas would be areas that have ambient monitoring data indicating that an area is not meeting the NAAQS or is very close to not meeting the NAAQS, but the area has not been formally designated as a nonattainment area by EPA. The rules are designed to provide incentives for new or modified industrial sources to obtain offsets from sources (i.e., priority sources) that are significantly contributing to the air quality problems in the area, such as woodstoves.

In an attainment area that does not meet the PM2.5 standard, such as Lakeview, new sources cannot build or existing sources cannot expand because the area exceeds the PM2.5 standard already. As part of DEQ’s permitting rules, any new or expanding source has to conduct a Prevention of Significant Deterioration (PSD) analysis that assures the area will meet the standard with the additional emissions. Unfortunately, since the background concentration is above the PM2.5 standard, there is no possible way for the new or expanding source to construct so that the area’s PM2.5 concentrations can stay below the PM2.5 standard. Sources cannot obtain offsets because the rules do not allow offsets in an attainment area.

A sustainment area designation on the other hand allows the possibility of offsets in Lakeviewfrom the predominant source of pollution, woodstoves. These rules provide the area with more economic flexibility, allowing industry to build or modify by obtaining offsets which could help the area to show attainment sooner. It would also help solve the economic problem in Lakeview by providing funds to change out uncertified wood stoves. These rules would allow for economic growth without compromising air quality. It also allows a community to help solve their air quality problem.

Declaring the Lakeview UGB area as a sustainment area would be beneficial because it supports much needed economic development in the area while improving air quality at the same time. Being classified a sustainment area also serves as a useful tool regarding the area’s participation in EPA’s PM Advance program. The sustainment area rules could be included as a potential strategy in the PM Advance plan.

# PM ADVANCE PROGRAM

In 2013, EPA announced the development of a voluntary program that communities could participate in to reduce emissions of PM. This program, called PM Advance, was modeled after EPA’s existing ozone advance program. Under the program, any area that has not officially been designated nonattainment can voluntarily sign up to participate in PM Advance, develop a plan showing how the area will reduce emissions in 5 years, and potentially avoid a nonattainment designation in the future. Development of the plan is based on community involvement and input to identify and implement emission reduction strategies. These strategies can be changed or modified as needed to accomplish the objective of meeting the PM2.5 standard.

## Lakeview’s PM Advance Plan

DEQ, in coordination with the Town of Lakeview and Lake County formed an advisory committee to develop a plan to achieve emission reductions by 2019. From June 2013 through December 2013, the advisory committee met monthly to discuss issues, identify the sources of PM in Lakeview, and to brainstorm and recommend strategies that the community would implement over the next five years. The committee put forward a suite of options to implement over the next few years. This included enhanced education and outreach for woodstoves?, continued implementation of the voluntary woodstove curtailment call, current and future woodstove changeouts, an agreement with the USFS to not burn on poor air quality days, and the potential expansion of open burning restrictions to incorporate more of the county area (current law only applies to the UGB). The town also hopes to pursue future strategies including additional woodstove changeouts, long-term efforts to find alternate sources of heat other than wood (such as geothermal or natural gas), and additional town and county ordinances to restrict use of woodstoves. Sustainment area rules will help the community change out uncertified wood stoves, the primary source of emissions that cause the exceedances of the PM2.5 standard.